

# Futaba®

## FET AMP WITH AM 4 CHANNEL RECEIVER FOR MOTOR AIRCRAFT

# MCR-4A

## RECEIVER WITH LINEAR CONTROLLER

Thank you for your purchase. When using the MCR-4A with an FP-4N AM or NEW SKY ATTACK r/c set, read this manual with the FP-4N AM or NEW SKY ATTACK instruction manual.

### FEATURES OF THE MCR-4A

- FET amplifier with miniature lightweight 4-channel receiver and motor controller in one pack.
- Since the drive motor power supply (7.2 V NiCd battery pack, etc.) can also be used to power the receiver and servos, troublesome wiring is unnecessary and the model can be made lighter.
- Futaba high power MOS FET is used in the amplifier. Motors from 280 to 540 class can be controlled.
- Built-in high performance low voltage "autocut" circuit prevents loss of control due to power supply voltage drop during flight.
- Since the motor speed can be controlled steplessly from maximum slow to high, acrobatics equal to those of engine aircraft can be reproduced even with a 280 class motor aircraft.

### FEATURES OF MCR-4A RECEIVER

- High performance AM 4-channel receiver.
- Narrow band design using a narrow band ceramic filter.
- New miniature custom IC used in decoder.
- New crystal socket is invulnerable to vibration and shock, eliminates faulty contact.

### FEATURES OF MCR-4A AMP

- Built-in heat protector prevents overheating of the amplifier by a continuous overcurrent.
- Motor idle or maximum slow can be arbitrarily set at the transmitter throttle stick maximum slow position by built-in idle point trimmer.
- Built-in constant voltage power supply circuit operates the receiver servos at the best voltage at all times.

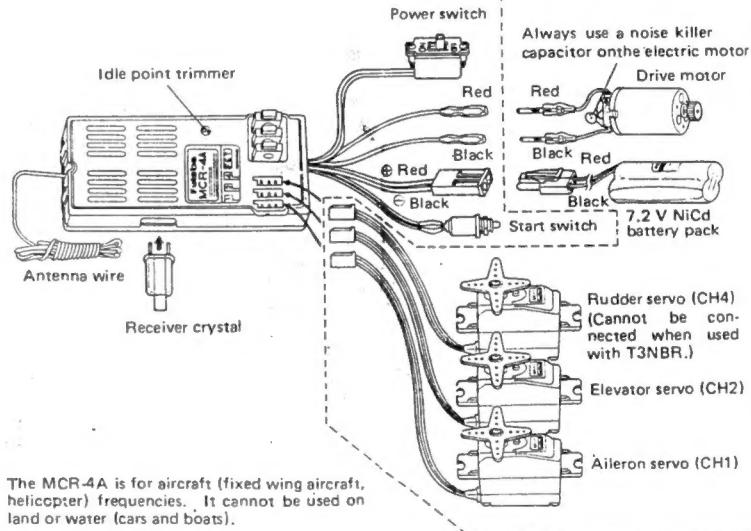
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### MCR-4A FET AMP WITH BUILT-IN RECEIVER

Dimensions	: 31.6 x 74.2 x 16.1 mm (excluding protrusion at top)	Receiving range	: 500 m on the ground 1000 m in the air when FP-T4N AM transmitter used (under best conditions)
Weight	: 44.0 g (excluding switches and connectors)		
RECEIVER		AMP	
Receiving frequency	: 40 MHz 40.710, 40.730, 40.750, 40.770, 40.790, 40.810, 40.830, or 40.850.	Operating system	: idle to maximum speed no brake, idle point trimmer
Intermediate frequency	: 455 kHz	Voltage	: 6.0 to 8.4 V
Current drain	: 26 mA	Continuous maximum current	: 100 A
		Momentary maximum current	: 450 A
		Resistance loss	: 0.01 Ω

### MCR-4A HANDLING INSTRUCTIONS AND PRECAUTIONS

#### MCR-4A, servo, and battery connections

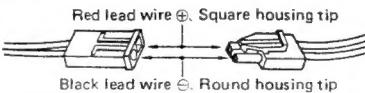


- The MCR-4A can control 280 class to 540 class motors.
- 6 V (5 batteries), 7.2 V (6 batteries), or 8.4 V (7 batteries) NiCd battery pack can be used with the MCR-4A. (When using a 540 class, etc. motor, purchase an NiCd battery pack connector off the market. Be sure that the (+) and (-) polarities are correct. If the (+) and (-) connections are reversed, the MCR-4A may be damaged beyond repair.)

## PRECAUTIONS

- Connect the MCR-4A, servos, NiCd battery pack, and motors as shown in the figure. Then extend the transmitting and receiving antennas to their full length.
- The motor controller connects to channel 3 in the MCR-4A.
- Turn on the transmitter power switch, then turn on the MCR-4A switch. The servos will stop near their neutral position. Move the transmitter sticks and check that each servo follows the movement of its control stick.
- Connect the pushrods to the servo horns and check that the direction of travel of each servo matches the direction of operation of its transmitter stick. If a servo does not move in the proper direction, flip its reversing switch.
- Operate each servo over its full stroke and check if the pushrod binds or is loose. If too much force is applied to the horn, the servo will be adversely affected and the battery pack will drain very quickly. Make the stroke of each control mechanism somewhat larger than the full stroke (including trim) of the servo horn. Adjust the servo horns so that they move smoothly even when the trim lever and stick are moved in the same direction simultaneously.
- Be alert for electrical noise. The MCR-4A is noise-resistant, but not noise-free. It is recommended that a noise killer capacitor and noiseless parts be used.
- Just because the MCR-4A antenna wire is long, do not cut it or fold it back onto itself. This will detune receiver.
- The crystal can be changed from outside the MCR-4A case. Always use a Futaba transmitting/receiving AM crystal set to change frequency within the band.
- After mounting is complete, check each part, then check the range by making the transmitter antenna as short as possible and extending the MCR-4A antenna to its full length and operating the set from a distance of 20 m to 30 m. The movement of each servo should follow the movement of its transmitter control stick.
- Motor aircraft vibrate less than engine aircraft, but the receiver servos should be vibration-proofed.

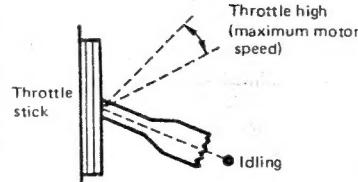
- If the NiCd battery pack is connected in reverse, the MCR-4A may be damaged beyond repair. Be sure that the (+) and (-) connections are correct. Set the transm



The idle point trimmer sets the drive motor idling point.

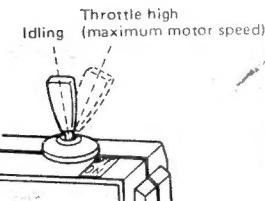
### <When used with T4N AM>

- Set the transmitter throttle servo reversing switch to the normal position.
- Set the transmit throttle stick to the slowest position (stick all the way forward), turn on the MCR-4A power switch, press the start switch, and set the idle point trimmer to the point at which the motor idles.
- If the start switch is not pressed, the drive motor will not run.



### <When used with NEW SKY ATTACK (T3NBR)>

- Note that the ON and OFF relationship of the channel 3 switch is the opposite of that given on the switch nameplate.
- In the OFF direction (pushed back), the drive motor runs at top speed. In the ON direction (pulled forward), the drive motor idles.
- Before adjusting the idle point trimmer, switch the stick to the idling direction as shown in the figure.



- When the MCR-4A is used with the NEW SKY ATTACK (T3NBR), channel 3 cannot be used.

- Turn the idle point trimmer slowly and without too much force.
- If the drive motor rotates in the reverse direction, change the connection of the lead wire from the MCR-4A at the motor terminals.
- Before pressing the MCR-4A start switch, check that the transmitter throttle stick is in the slowest position. Starting the drive motor suddenly is dangerous. This also applies when the idle point trimmer is changed. Be very careful.
- If an overcurrent flows continuously in the motor for some reason, the heat protector will operate and stop the motor. When the temperature drops after a short time, the motor can be controlled once more. Correct the cause of the continuous overcurrent before using the set.
- The heat protector does not protect the set against momentary overcurrent caused by shorting of the drive motor lead wires, etc.
- If the drive motor is stopped by the "autocut" function during flight, land the aircraft immediately and safely.

For the handling precautions and other information, refer to the FP-4N AM or NEW SKY ATTACK instruction manual.



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